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AUTHOR Magallanes, Adriana Moreno  
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## ABSTRACT

In response to low achievement in mathematics at a middle school, an ethnomathematic approach was used to teach coordinate planes. Whether there were achievement differences between students taught by the culturally sensitive approach and those taught by a traditional method was studied. Data were collected from the coordinate planes unit examination for prealgebra students, and the mean scores of those in the experimental and comparison groups were compared. The significance of the statistical difference between the two groups provides evidence that the use of the ethnomathematics software in concert with traditional teaching practices can increase student success in learning about coordinate planes. Three appendixes contain supplemental information about student mathematics achievement. (Contains 1 table, 4 figures, and 15 references.) (SLD)

COMPARISON OF STUDENT TEST SCORES IN A COORDINATE PLANE UNIT  
USING TRADITIONAL CLASSROOM TECHNIQUES VERSUS TRADITIONAL  
TECHNIQUES COUPLED WITH AN ETHNOMATHEMATICS  
SOFTWARE AT TORCH MIDDLE SCHOOL

MAT 640—Applications of Research for the Art of Teaching

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**Dr. Eduardo Jesús Arismendi-Pardi**

**Faculty Advisor**

A thesis report presented to the School of Education  
in partial fulfillment of the requirements for  
the degree of Master of Education

**National University**

**June, 2003**

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by

Adriana Moreno Magallanes

June, 2003

The problem identified for this study was that students are not achieving as necessary for academic success in mathematics at Torch Middle School. As a result, the purpose of this study was to determine if students who were taught a unit in coordinate planes with an ethnomathematics software in conjunction with traditional teaching methods would show significant differences in test scores from those who received traditional instruction only. Hence, the research question for this study was: "Is there a significant difference in test scores of students who are taught a unit in coordinate planes using an ethnomathematics software coupled with traditional teaching methods over those who are taught the same unit using traditional teaching methods?"

A review of literature was conducted on the topics of technology uses inside the classroom and the use of ethnomathematics pedagogy within the classroom. Through

the literature review it was conveyed that technology used in the classroom has both advocates and opposition. Some see a need for technology in the classroom while others find that it may be a distraction to the learning process. In the case of ethnomathematics there is a parallel to technology, in that the controversy continues. There are many who endorse the use of an ethnomathematical pedagogy while others see it as a passing fad that is watering down the curriculum.

A quasi-experimental research design was used to conduct the study. Data was collected from the unit examination taken by those students who were enrolled in the researcher's pre-algebra course at Torch Middle School. The mean test scores of two groups of students—Group A and Group B—were then calculated and compared using a two-tail t-test with a level of significance of 0.05.

Based on the results of the statistical test the null hypothesis was rejected and the alternative hypothesis was accepted. The significance of statistical difference between the two groups provided evidence that the use of the ethnomathematics software in concert with traditional teaching practices can increase student success in the particulars coordinate planes and its associated concepts. It was concluded that there is statistical evidence to suggest that teaching a coordinate planes unit in concert with an ethnomathematics software is an effective tool to increase student success in this area.

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## Chapter 1

### INTRODUCTION

Torch Middle School is one of eight schools in the Bassett Unified School District (BUSD) and the only middle school servicing grades sixth through eighth. The student population is approximately 89.1% Latino, as reported by the school accountability report card (Bassett Unified School District, 2003). The surroundings of the school are primarily industrial, with train tracks adjacent to the border on the west side. In addition, this is also considered a low socioeconomic area with 92% of its students participating in the federal lunch program. Furthermore, specifically in regard to mathematics achievement of students, according to STAR testing results from 2001, only 34% of eighth grade, 38% of seventh grade, and 26% of sixth grade students scored at or above the 50<sup>th</sup> percentile on the mathematics portion of the test (Bassett Unified School District, 2003).

#### Nature of the Problem

The problem identified for this study was that students are not achieving as required for academic success in mathematics, as shown by the state test scores (STAR) while receiving instruction through the traditional Western-European teaching methods that are being practiced within the classroom.

Review of data suggests that "chalk and talk" and "drill and kill" may not be the most effective way to teach the student population and that the classroom needs to become more "student centered," rather than "teacher centered" (Zernike, 2001). The

state testing scores have been below what is considered acceptable or proficient for the grade level consistently for at least the past three years (California Department of Education, 2003).

#### Purpose of the Study

The purpose of the study was to determine if students taught with an ethnomathematics software coupled with traditional teaching methods during a unit in coordinate planes earned significantly different test scores than those students who received traditional teaching instruction only. Measurements of performance were compared after administering the same assessment tool to both groups upon completion of the unit.

#### Significance to the Institution

This study is significant to the institution because students will have the opportunity to increase test scores and learn key mathematical skills by using the ethnomathematics software developed by Dr. Ron Eglash, a professor of mathematics at Rensselaer Polytechnic Institute (RPI). Furthermore, students who are passed on and have not developed the understanding and knowledge of curriculum standards creates curriculum slippage, thus setting up the student for academic hardship and possible failure (California Department of Education, 2001).

#### Research Question

There was one research question for this study: "Is there a significant difference in test scores between students who are taught a unit in coordinate planes using an ethnomathematics software coupled with traditional teaching techniques and those students who are taught the same unit using traditional teaching methods?"

### Definition of Terms

For the purposes of this study the following terms needed clarification.

API. Academic Performance Index.

Beadloom. An interactive software program developed by Dr. Ron Eglash, professor of mathematics at Rensselaer Polytechnic Institute, that allows students to create beadwork while learning and applying coordinate plane concepts using the knowledge of Native American foundations. This program may be accessed at,

<http://www.ccd.rpi.edu/Eglash/csdt/na/loom/overvw.htm>

CAT 6. California Achievement Test used as a component in calculating the STAR testing cores of an institution.

Ethnomathematics. A term coined by Dr. Ubiratn D'Ambrosio, a Brazilian mathematician used to express the relationship between culture and mathematics.

RPI. Rensselaer Polytechnic Institute.

STAR. Standardized Testing and Reporting.

## Chapter 2

### REVIEW OF LITERATURE

#### Overview

The low achievement of students at Torch Middle School continues to be an area of concern. Continued reports from the California Department of Education continues to exhibit evidence that this situation is not getting better despite teacher efforts. The literature review focused on two major areas of discussion: technology use in the mathematics classroom and the application of ethnomathematics pedagogy.

#### Theoretical and Conceptual Thinking of Experts

##### *Technology use in Mathematics*

According to Gibbs (2003), computers that were once looked on by mathematical researchers as mere calculators are now able to come up with new formulas for fundamental constants such as  $\log 2$  and  $\pi$ . In fact, it has been noted that "in recent years, our computer-based ability to connect and manipulate representations of knowledge in mathematics have become ever more powerful and flexible" (Math Forum, 2003). With ability such as this it is a wonder that it is not integrated with the curriculum more often. In fact, it has been reported in a study conducted by Li (2003) that technology has the ability to affect three areas: Math phobia, equity, and teacher beliefs about instructional uses. The importance of technological integration with the curriculum has become so recognized that the American Mathematical Association of Two-Year Colleges now recommends "the appropriate use of technology in the classroom and mathematics laboratory... [Furthermore] appropriate use of technology plays a key role in this instruction and in the teaching of appropriate problem-solving skills" (The American

Mathematical Association of Two-Year Colleges, 2003, ¶1). Furthermore, it has been stated that "mathematics curriculum should be designed to incorporate the pedagogical advantages of technology" (The American Mathematical Association of Two-Year Colleges, 2003, ¶2). The use of technology in the classroom has the ability to function in many ways, specifically in mathematics by assisting in computations, drills, and being able to exemplify mathematical concepts visually (Wenglinsky, 1998). Moreover, advocates for technology have also noted that more recent uses of technology in the classroom do in fact support higher-order thinking (Harvey and Charnitski, 2000).

There are also those within the realm of education who doubt the staying power of technology in the classroom, therefore the response of educational practitioners remains mixed. In spite of the fact that there are many who agree with the previous and are, "... enthusiastic, seeing it as a tool most needed to facilitate more comprehensive educational reform ... others see as a passing fad, more of a distraction from school than anything else" (Wenglinsky, 1998). In addition, there is always the need to see results of effectiveness, which the argument for technology is lacking, only a few evaluations have been done. Furthermore, the issue of cost-effectiveness shows that "while there may be some gains to academic achievement, these are not proportionate to the costs of buying and maintaining computers" (Wenglinsky, 1998).

Corresponding with those opposing technology is the argument that learning may include a social element that is embedded within the interaction of teachers and students become limited when the computer becomes more central in the learning environment (Harvey & Charnitski, 2000).

*Ethnomathematics Pedagogy in the Classroom*

According to Battista (1999) there have been numerous studies conducted that have shown the ineffectiveness of traditional methods of teaching mathematics and how traditional methods really suppress the development of students' mathematical reasoning and problem-solving skills. The idea behind ethnomathematics is that rather than all of mathematics coming from a male Eurocentric point of view and mathematics being it's own language, the gap is narrowed by bridging culture and mathematics. Some teachers do not understand how culture and relates to children and their learning (D'Ambrosio, 2001). In fact, many of those who are skeptics of the use of ethnomathematics in the classroom see this concept as a "politically correct fad" (Weiger, 2000). However, the reality is that much of the mathematics curriculum that is used in the classroom is "so disconnected from the child's reality that it is impossible for the child to be a full participant in it, (D'Ambrosio, 2001). Students are in need of a new pedagogy at many levels and according to Arismendi-Pardi, (as cited in Newman, 2001) "traditional math curriculum has failed students, especially ethnic minorities and women..." Parallel, to the thoughts of Arismendi-Pardi and D'Ambrosio, Craig (1996) suggests that student diversity require diverse teaching. In fact, he has noted that by making changes in teaching it can have the ability to assist positive changes in student performance which may be hindered by apparent biases of traditionally taught class against non-traditional students (Nelson, 1996).

Furthermore, some would maintain that ancient mathematics are irrelevant today but in fact, "Western mathematics really does not meet the needs of all people and is not always easily understood outside the 'mainstream' culture," (Australian Academy of

Science, 2002). In the classroom, rather than be restrained to the procedures taught students should be encouraged to construct personal mathematics and mathematical understandings and be able to explain their work (D'Ambrosio, 2001). By allowing students to make personal connection to the concepts through cultural characteristics of children's invention, experience, and application the task of "memorizing and forgetting facts and procedures that make little sense to them [is alleviated]" (Battista, 1999).

Conversely, there are those who do not share the view of those who practice ethnomathematics but consider this as a decrease in rigor (Greene, 2000). Those who counter ethnomathematics have gone as far to state that "the ethnomathematics complaint explains nothing, obscures much, and dumbs down anything else (Coombs, 2003, ¶5). According to Greene (2000) some critics believe that ethnomathematics is not the best use of children's time and suggest that European thinking offers the most efficient and powerful tools for the classroom. Likewise, according to Sokal, a professor at New York University (as cited by Greene, 2000) "[ethnomathematics] could undermine the goal of actually providing students a rigorous education in mathematics itself by giving teachers who are afraid of mathematics and excuse to teach something other than mathematics." Furthermore, using ethnomathematics pedagogy has also been thought of as dumbing down or watering down the school curriculum (Greene, 2000). Coombs (2003) remarks that those who use the ethnomathematics approach are "feel-good facilitators" rather than true educators who demand memorization, number sense, and mastery of hierarchical mathematics domains.

### Summary

The literature review on technology and ethnomathematics in the classroom revealed that there is a problem when it comes to the understanding of uses and application of these concepts. Many in the education field maintain that there are pedagogical advantages of technology that is beneficial to student learning. Likewise, there is also research to support the effectiveness of non-Western, ethnomathematics teaching methods over the traditional methods that are currently failing the multicultural student population. The curriculum must therefore be adapted and designed in such a way that students will be able to gain skill and knowledge through opportunities incorporating and integrating both technology and ethnomathematics.

### Chapter 3

## METHODOLOGY AND PROCEDURES

### Procedures

A quasi-experimental research methodology was used for this study, and the following specific procedures were used. First, a review of literature on technology and ethnomathematics in the classroom was conducted. Second, data was collected in the form of raw scores from the unit examination that was given (see Appendix A). Third, a 2-tail t-test for independent means was conducted in order to obtain quantitative data that was needed using Microsoft Excel from the Windows 2000 version (see Appendix B).

### Data Collection

#### *Population and Sample*

The population for this experimental research consisted of all students who were taking seventh grade pre-algebra at Torch Middle School. The sample for this experimental research consisted of students who were enrolled in the researcher's sections of seventh grade pre-algebra during the 2002-2003 school year. There were four instructors teaching this same course during the 2002-2003 school year and eight classes of the course were offered respectively. Six of the eight classes were taught before the lunch break and the other two took place in the afternoon.

The sample was divided into two groups. Those students who were taught the coordinate planes unit with the ethnomathematics software were placed in Group A; those students who were taught the same unit using traditional teaching methods only were placed in Group B.

The test grades were obtained from the unit test scores compiled by the researcher. The investigator taught both classes, using the same textbook, supplemental materials, and examination for a coordinate planes unit during the 2002-2003 school year. Each of these classes was identical in content and only differed in that they were taught using two different methods. Students who have been identified as GATE were not included in the sample. The scores of each student were left as raw scores to be calculated into the semester grade at a later time. The mean of each group was computed and the mean scores were compared using the t-test. Microsoft Excel of Version Windows 2000 was used to test the null hypothesis.

#### Data Analysis

##### *Null Hypothesis*

The null hypothesis for the research question was: "There is no significant statistical difference, at the 0.05 level, between the mean score on a coordinate plane examination between those students who were taught the unit using the ethnomathematics software in conjunction with traditional teaching methods at Torch Middle School and the mean score of students who were taught the same unit using traditional teaching methods."

##### *Alternative Hypothesis*

The alternative hypothesis was that: "Students who are taught the coordinate planes unit using the ethnomathematics software in conjunction with traditional teaching methods at Torch Middle School will have significantly different test scores, at the 0.05 level, than those students who were taught the unit without the ethnomathematics software."

### *Level of Significance*

The level of significance used for this study was 0.05 with a two-tail rejection region because it is a conventional level for rejecting null hypothesis.

### *Region of Rejection*

A two-tail region of rejection was calculated. As the alternative hypothesis was that the students who utilized the ethnomathematics software would show significant statistical difference on test scores, the region of rejection was to the left of zero, on the negative side of the normal curve.

### *Statistical Test*

A two-tail t-test of hypothesis was used to test the means of independent samples. This statistical test was used because it was hypothesized that there was no significant statistical difference between the mean score of students who were taught a coordinate planes unit using an ethnomathematics software at Torch Middle School and those who were taught the unit using traditional methods only. Additionally, the statistical assumptions or conditions for hypothesis testing concerning the difference between the means of independent samples are that: (a) random and independent samples are selected from normally distributed populations, and (b) the variability of the measurement in the two populations is the same and can be measured by a common variance.

### *Assumptions*

It was assumed that the samples for this study were obtained from normally distributed populations with equal variances and for that reason a two-tail t-test was used to test the means of independent samples. It was also assumed that the students from each pre-algebra class during the 2002-2003 school year were comparable in

mathematical ability and preparation. It was also assumed that those GATE and GATE-like students who were excluded each class did not significantly affect the results of the study.

In addition, it was assumed that the selection of the sample for this study was representative of the population at Torch Middle School. Finally, this assumption was a possible threat to the validity within the research because it is conceivable that student achievement between classes may vary depending on various factors such as student attributes and mathematical ability.

#### Limitations

The results obtained in the study were specific to the seventh grade pre-algebra class taught by the instructor at Torch Middle School. These results are limited to the field of teaching mathematics in the k-12 segment of education and to the school. This limitation may be a threat to the external validity in that the results relate to the seventh grade population in general and more specifically to the students at Torch Middle School specifically. Furthermore, the results may be a threat to the population external validity since results obtained from research are limited in the ability to generalize to other middle school students with similar characteristics such as mathematical ability, gender, and ethnicity.

## Chapter 4

## RESULTS

This study was conducted to determine if there was significant statistical difference on test scores between students who were taught a unit on coordinate planes using both traditional techniques and an ethnomathematics software and those who were taught the same lesson using traditional teaching methods exclusively. The following Table records both the statistics and t-test calculations that were obtained by using Microsoft Excel 2000 to compare the means of the test scores of the two groups of students who had been taught the coordinate plane unit at Torch Middle School. (a) those students who were taught with the traditional methods and ethnomathematics software, and (b) those who were taught using solely traditional teaching methods.

Table

t-test Comparison of Mean Differences of Independent Samples

| Group               | Mean  | Standard<br>Deviation | # of Students |
|---------------------|-------|-----------------------|---------------|
| A: Ethnomathematics | 32.68 | 33.942                | 22            |
| B: Traditional      | 27.25 | 63.152                | 24            |

Level of Significance = 0.05

Degrees of Freedom = 44

Critical t-value = 2.0154

Calculated t-value = 2.623

Since the calculated t-value exceeds the critical t-value at the 0.05 level of significance, the null hypothesis was rejected and the alternative hypothesis was accepted. There was a significant statistical difference between the mean scores between those students who were taught a unit in coordinate planes using ethnomathematics software and those who were taught the same unit using traditional teaching methods exclusively.

## Chapter 5

### DISCUSSION, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

#### Discussion

The purpose of this study was to determine whether or not teaching a coordinate planes unit with an ethnomathematics software developed by Dr. Ron Eglash at Rensselaer Polytechnic Institute would make a difference in student performance on a unit examination in coordinate planes at Torch Middle School. It was clearly conveyed through the literature review that the utilization of both technology and ethnomathematics pedagogy in the classroom has the ability be a significant influence in the determination of student success.

The literature conducted on the topics of the uses of technology and ethnomathematics pedagogy in the classroom revealed that students do benefit from the implication of both technology and ethnomathematics. However, the topic of technology remains divided. Also, if technology is used the question is then how and what type, some may say that in the mathematics curriculum a calculator is sufficient. Analogous to technology, an ethnomathematics support remains divided through the literature. The topic of ethnomathematics and its place in the classroom however is far more controversial and further from finding any kind of middle ground.

The data from the study that was conducted indicated that the students who were taught the coordinate plane unit using ethnomathematics software had a mean score of 32.68 on the unit examination, which is a percentage of 77.81% correct. Conversely, those students who were taught without the use of the ethnomathematics software had a mean score of 27.25 on the unit examination, which is a percentage of 66.88% correct. It

is therefore evident, based on the findings of the research, that using the ethnomathematics software within the context of teaching coordinate plane concepts may in fact improve student performance.

### Conclusions

The research question for this study was: "Is there a significant statistical difference in test scores between students who are taught a coordinate plane unit using traditional teaching methods and an ethnomathematics software and those students who receive teaching of the same lesson using traditional teaching methods alone?" It was concluded from the results of the t-test that since the calculated t-value of 2.623 exceeded the critical t-value of 2.0154 at the 0.05 level of significance that there is statistical evidence to suggest that teaching a coordinate planes unit integrating an ethnomathematics software is an effective tool for increasing student success in this area.

### Implications

The result and conclusion from this study was that those students who were taught a coordinate plane unit using an ethnomathematics software showed a statistically significant difference on unit examination test scores in comparison to those students who were taught the unit using traditional teaching methods only. In addition, there is clear statistical evidence that can be disseminated and used in the future to employ further use of ethnomathematics pedagogy and technology in the instruction of coordinate planes for the importance of student success in building key mathematical concepts.

### Recommendations

Recommendations for this study include the planning of a faculty staff development workshop to thus dissemination the findings and results of the study to the

faculty at the schools site. Further recommendations include open discussions and workshops about cross-curricular instruction through the utilization of technology and ethnomathematics pedagogy. In addition, it is recommended that the Mathematics Department conduct a meeting with its faculty to investigate the possibility of integrating these strategies into the curriculum for added student success.

Finally, further studies should be conducted with other populations and perhaps different institutions investigated. The performance of such investigations would further the progress of the controversy at hand.

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## APPENDIXES

## Appendix A

*Raw Scores Used for T-Test*

|    | Traditional Method | Traditional + Software |
|----|--------------------|------------------------|
| 1  | 22                 | 24                     |
| 2  | 25                 | 38                     |
| 3  | 10                 | 39                     |
| 4  | 26                 | 35                     |
| 5  | 32                 | 30                     |
| 6  | 30                 | 26                     |
| 7  | 27                 | 31                     |
| 8  | 17                 | 18                     |
| 9  | 35                 | 36                     |
| 10 | 23                 | 31                     |
| 11 | 23                 | 32                     |
| 12 | 33                 | 39                     |
| 13 | 30                 | 27                     |
| 14 | 30                 | 27                     |
| 15 | 26                 | 31                     |
| 16 | 31                 | 34                     |
| 17 | 34                 | 36                     |
| 18 | 40                 | 39                     |
| 19 | 24                 | 37                     |
| 20 | 40                 | 36                     |
| 21 | 32                 | 42                     |
| 22 | 33                 | 31                     |
| 23 | 23                 |                        |
| 24 | 8                  |                        |

## Appendix B

*Statistics Generated by T-Test via Microsoft Excel 2000*

t-Test: Two-Sample Assuming Equal Variances

|                              | <i>Traditional Method</i> | <i>Traditional + Software</i> |
|------------------------------|---------------------------|-------------------------------|
| Mean                         | 27.25                     | 32.68181818                   |
| Variance                     | 63.15217391               | 33.94155844                   |
| Observations                 | 24                        | 22                            |
| Pooled Variance              | 49.2107438                |                               |
| Hypothesized Mean Difference | 0                         |                               |
| df                           | 44                        |                               |
| t Stat                       | -2.623332292              |                               |
| P(T<=t) one-tail             | 0.005960469               |                               |
| t Critical one-tail          | 1.680230071               |                               |
| P(T<=t) two-tail             | 0.011920939               |                               |
| t Critical two-tail          | 2.0153675                 |                               |

## Appendix C

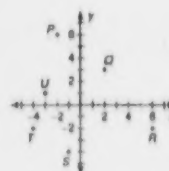
## Unit Examination

## Assessment

Name \_\_\_\_\_ Date \_\_\_\_\_

In Exercises 1–6, match the ordered pair with its point in the coordinate plane. Name the quadrant that contains the point.

- |               |               |
|---------------|---------------|
| 1. $(-1, -4)$ | 2. $(2, 3)$   |
| 3. $(6, -2)$  | 4. $(-2, 6)$  |
| 5. $(-3, 1)$  | 6. $(-4, -2)$ |



In Exercises 7–10, plot all the points in the same coordinate plane. Name the quadrant that contains each point.

- |              |             |               |               |
|--------------|-------------|---------------|---------------|
| 7. $(6, -2)$ | 8. $(3, 4)$ | 9. $(-2, -5)$ | 10. $(-3, 2)$ |
|--------------|-------------|---------------|---------------|

In Exercises 11 and 12, plot the points in a coordinate plane. Connect the points to form a rectangle.

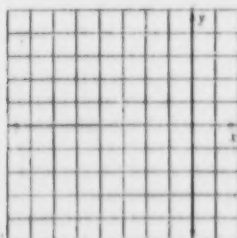
- |                                                       |                                                           |
|-------------------------------------------------------|-----------------------------------------------------------|
| 11. $A(2, 1)$ , $B(5, 1)$ , $C(2, 2)$ , and $D(5, 2)$ | 12. $A(-1, 5)$ , $B(-1, -4)$ , $C(3, 5)$ , and $D(3, -4)$ |
|-------------------------------------------------------|-----------------------------------------------------------|

In Exercises 13–15, show that the ordered pair is a solution of the equation. Then find three other solutions.

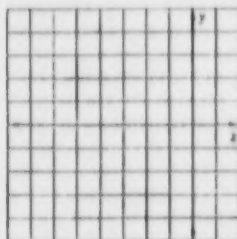
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|--------------------------------|----------------------------|------------------------------|
| 13. $2 + x = y$ ; $(-12, -10)$ | 14. $y - 3 = x$ ; $(6, 9)$ | 15. $x - y = 10$ ; $(12, 2)$ |
|--------------------------------|----------------------------|------------------------------|

In Exercises 16–17, plot the points, connect the points to form a rectangle, and find the length and width of the rectangle.

16.  $A(1, 1)$ ,  $B(1, -5)$ ,  $C(-4, -5)$ ,  $D(-4, 1)$



17.  $A(0, 2)$ ,  $B(0, -2)$ ,  $C(-6, -2)$ ,  $D(-6, 2)$

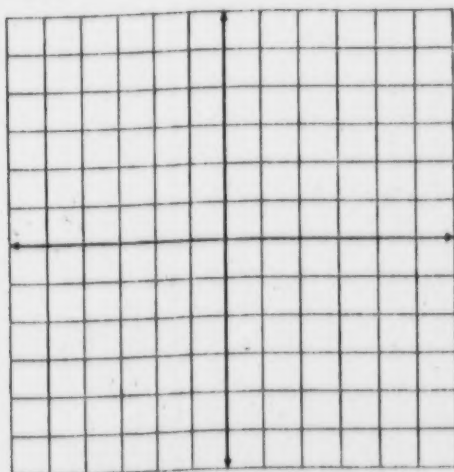


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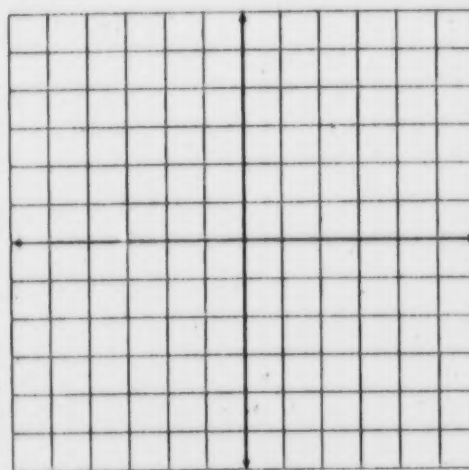
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**Coordinate Planes**

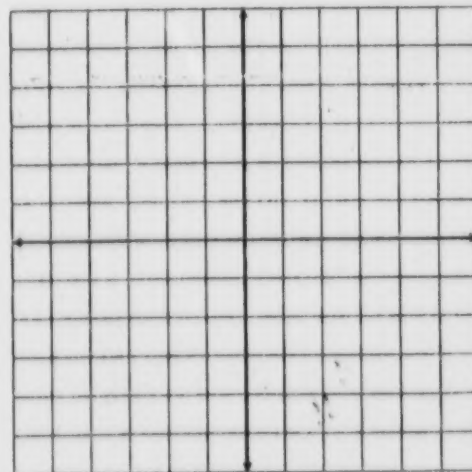
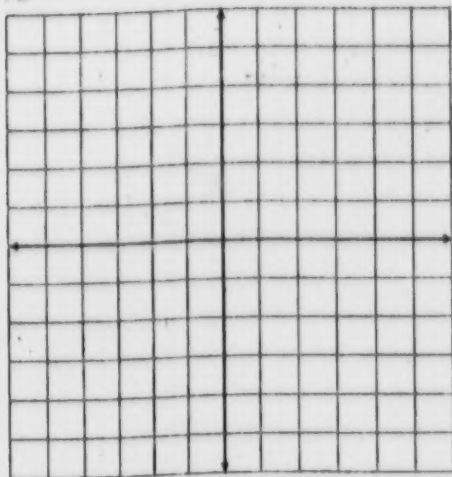
7-10



11.



12.

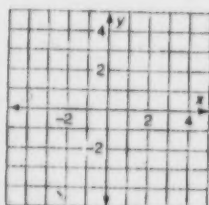


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Complete the table for each equation. Then, draw the graph.

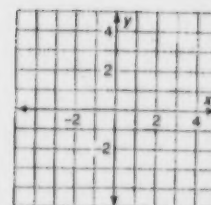
18.  $y = |2 - x|$

| x  | y |
|----|---|
| -2 |   |
| -1 |   |
| 0  |   |
| 1  |   |
| 2  |   |
| 3  |   |
| 4  |   |



19.  $y = |x| - 2$

| x  | y |
|----|---|
| -3 |   |
| -2 |   |
| -1 |   |
| 0  |   |
| 1  |   |
| 2  |   |
| 3  |   |

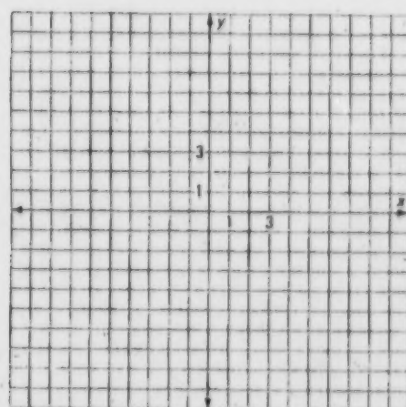


Graph each equation on the coordinate plane below and label it. *use a table: x | y | (x,y)*

20.  $y = x$     21.  $y = 2x$     22.  $y = 4x$     23.  $y = \frac{1}{2}x$

24.  $y = \frac{1}{4}x$     25.  $y = 5x$     26.  $y = \frac{1}{5}x$     27.  $y = 8x$

*3 solutions!*



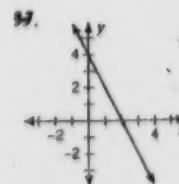
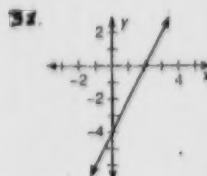
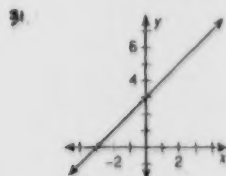
In Exercises 28-30 graph the equation and find the intercepts of the graph.

28.  $x - 4y = 3$

29.  $7x - 2y = 60$

30.  $5y = 20 - 3x$

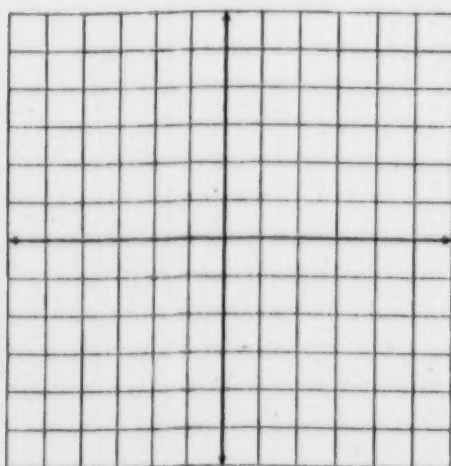
Identify the intercepts of the graph.



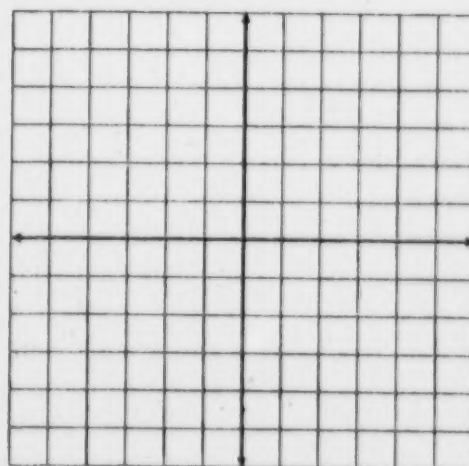
Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Coordinate Planes**

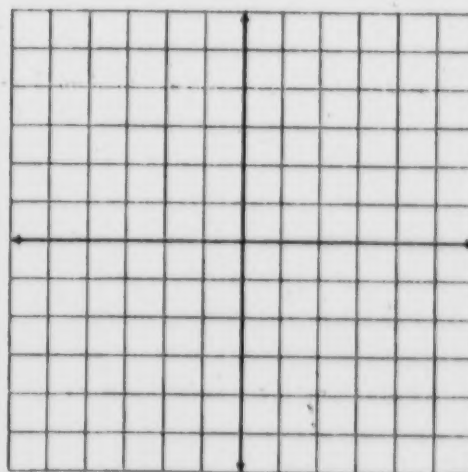
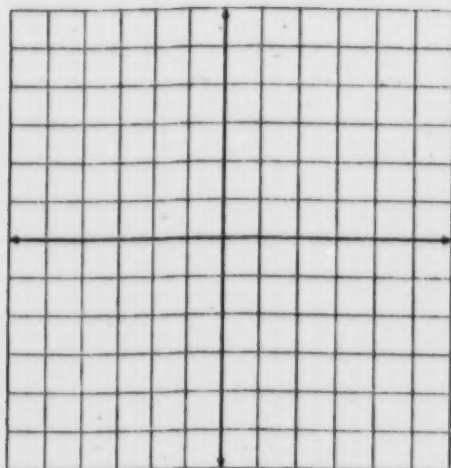
28.



29.



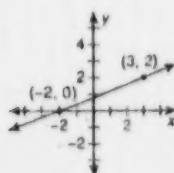
30.



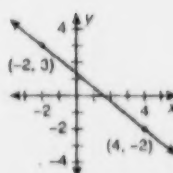
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In Exercises 31-36, find the slope of the line.

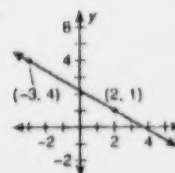
31.



35.



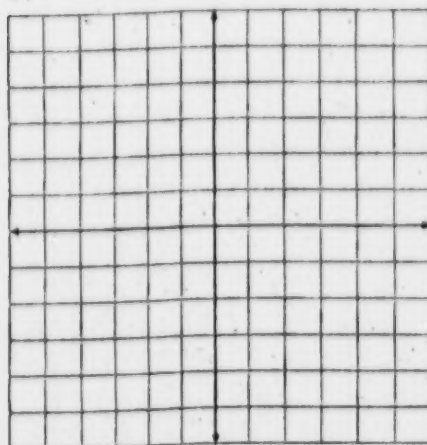
36.



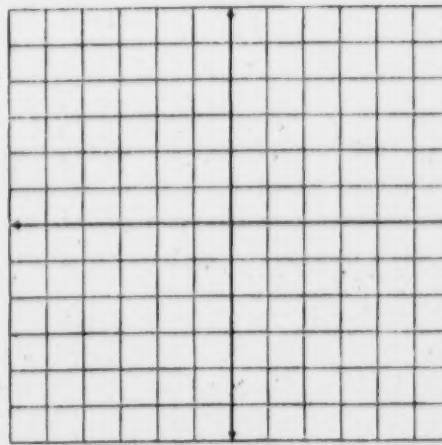
In Exercises 37-40, plot the points. Then find the slope of the line through the points.

37.  $(2, 6), (-3, 4)$ 38.  $(0, 4), (-3, 0)$ 39.  $(-1, -2), (-3, -2)$ 40.  $(0, -6), (-2, -1)$ 

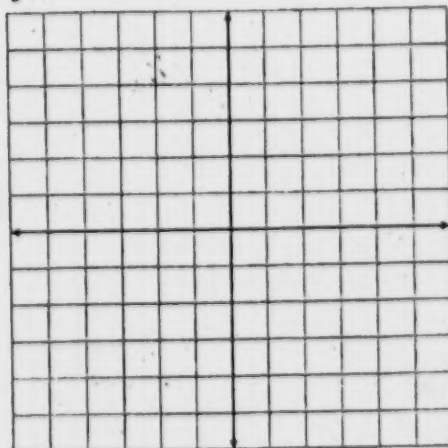
37.



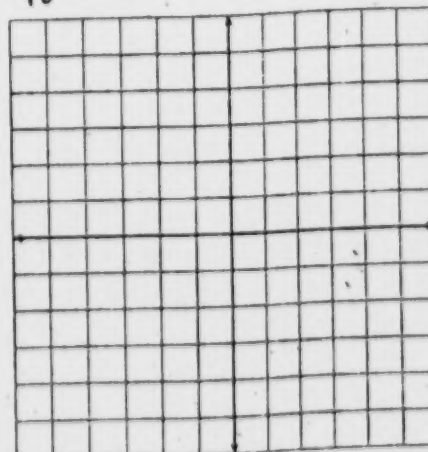
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39.



40.



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June 28, 2003

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Eduardo Jesús Arismendi-Pardi, Ed.D.  
Faculty Advisor



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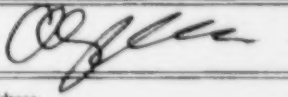
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